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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,711	01/13/2004	Jeffrey L. Milner	EJ-7563	2880
64091 7590 04/06/2009 AFTON CHEMICAL CORPORATION LUEDEKA, NEELY & GRAHAM, PC P.O. BOX 1871 KNOXVILLE, TN 37901				
EXAMINER				
LANG, AMY T				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/756,711

Applicant(s)

MILNER ET AL.

Examiner

AMY T. LANG

Art Unit

3731

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-5 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5 and 7-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 02/20/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/04/2009 has been entered.

Response to Amendment

2. The Affidavit under 37 CFR 1.132 filed 02/04/2009 is insufficient to overcome the rejection of claims 1, 3-5, and 7-13 based upon insufficiency as set forth in the last Office action because:

The Affidavit is insufficient since it refers to an incorrect application number in paragraph 4. The Affidavit refers to application number 10/225,040 and not the instant application.

Additionally, the Affidavit is insufficient since it fails to persuasively exclude Sullivan as a prior art reference. Specifically, paragraph 7 argues that Sullivan gives no direction as to the sulfur activity or CCT performance and that polysulfide mixtures exist which do not have a CCT value of greater than 125. Sullivan discloses a polysulfide mixture and the instant claim 3 only claims a polysulfide mixture. Table 3 of the instant specification shows that polysulfide mixtures have a value of 126 in the Copper

Corrosion Test. Therefore, it is the Examiner's position it is unclear as to how polysulfide mixtures exist which do not have a CCT value greater than 125 when the specification and instant claim 3 teach otherwise.

Paragraph 7 also teaches that the term polysulfide mixture is "an incredibly broad term." Therefore, since claim 3 only recites a polysulfide mixture, an incredibly broad term, the Affidavit is not commensurate in scope with this claim. Case law holds that whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range (i.e., scope). *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980), MPEP 716.02(d). In the instant case, claim 3 recites a broad polysulfide mixture while Affidavit argues for specific polysulfides.

Sullivan discloses specific amounts of the disulfide, trisulfide, and tetrasulfide in the polysulfide mixture. Table 3 of the instant Affidavit attempts to show that such ranges do not form a CCT value greater than 125 based on the CCT values in Table 3 of the specification. However, the Affidavit table is not persuasive since Table 3 in the Affidavit uses 466 as the CCT value for tetrasulfide. Table 3 in the specification is silent regarding the CCT value of tetrasulfide and instead shows that 466 correlates to pentasulfide. Therefore, no data is given that shows the CCT value of tetrasulfide.

Furthermore, Sullivan also discloses the use of higher polysulfides, which includes pentasulfide, di-nonyl polysulfide, and other polysulfides having higher CCT

values (noting that CCT values of pentasulfide and di-nonyl polysulfide have higher CCT values than disulfide or trisulfide). Therefore, the scope of Sullivan is not limited to the examples given in Table 3 of the Affidavit.

Lastly, the instant claims recite the CCT values as given in mg. The instant specification teaches that the produced CCT value is the amount of weight loss and therefore would also refer to mg. However, Table 3 of the Affidavit does not refer to the CCT value in terms of mg and instead appears to use the wt% of the different polysulfides multiplied by the CCT value. Therefore, the final product is not in terms of only mg so that these values do not appear to directly correlate to the instant claims.

Response to Arguments

3. Applicant's arguments filed 02/04/2009 have been fully considered but they are not persuasive. Applicant argues (A) that there is no motivation to combine Perozzi with Waters ('464). As discussed below, Perozzi discloses that the lubricating oil comprises antiwear agents. Waters discloses an advantageous antiwear agent that is also used in lubricating oils and is advantageous by being zinc free and therefore will not pollute land. Therefore, Waters discloses specific and sufficient motivation to combine Perozzi with the antiwear agent of Waters.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 1, 3-5, 8, and 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Perozzi (US 5,498,355) in view of Waters (EP 0,434,464 A1) and Sullivan (US 2003/0171222 A1).

With regard to **claims 1, 3, and 10-13**, Perozzi discloses a lubricating oil composition comprised of hydrocarbyl dithiophosphate salt and dihydrocarbyl polysulfides (column 1, lines 6-10; column 2, lines 29-32; column 9, lines 38-41; column 16, lines 27-28). The hydrocarbyl portion is later disclosed as dihydrocarbyl since the formula of the hydrocarbyl dithiophosphate displays two hydrocarbyl moieties (column 9, lines 55-60). The polysulfides are further disclosed as typical and well known antiwear or extreme pressure additives (column 16, lines 27-28). Since Perozzi discloses more than one polysulfide, Perozzi clearly teaches a mixture of polysulfides.

The base oil of the composition is a mineral oil with a suitable viscosity for lubricating a crankcase (column 19, lines 23-24). The kinematic viscosity of the lubricating composition, as measured during the L-38 test that determines

characteristics of crankcase lubricants, is disclosed as 14.05 cSt at 100 degrees Celsius (column 24, lines 44-49; column 25, lines 1-15). Therefore, the base oil would also share this kinematic viscosity, since it is suitable for lubricating a crankcase.

Perozzi further discloses additional additives in the composition including corrosion inhibitors, rust inhibitors, antifoam agents, and dispersants (column 15, lines 16-19; column 16, lines 13-18; column 17, line 25). The dispersant is further disclosed as a boronated ashless Mannich base dispersant (column 17, lines 25-36, 50-58). Mannich base dispersants and succinimide dispersants are well known in the art and can be utilized interchangeably so that it would have been obvious to one of ordinary skill at the time of the invention for Perozzi to utilize a succinimide dispersant.

Perozzi does not disclose (i) the lubricating oil for use as gear oil (ii) the instantly claimed component D in the lubricating oil composition, or (iii) the polysulfide mixture comprised of di-t-butyl disulfide, di-t-butyl trisulfide, and di-t-butyl tetrasulfide.

With respect to (i) above, the term "gear oil" is an intended use phrase and is given no patentable weight. The examiner's position is supported by case law, which holds that "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation." *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997) and MPEP 2111.02.

With respect to (ii) above, Perozzi discloses the addition of one or more antiwear agents including amine salts of phosphorus acids (column 16, lines 19-25). Waters discloses a lubricating composition comprising a metal-free anti-wear or load carrying

additive (page 2, lines 18-24). This additive is further disclosed as di-hydrocarbyl thiophosphate amine salt, which clearly overlaps the instantly claimed component D (page 2, lines 47-53). The anti-wear or load carrying additive is present in the composition from 0.05 to 3wt%. Waters teaches that the additive is advantageous when added to a lubricating composition since it is zinc free (page 2, lines 7-9). Lubricating fluids that contain zinc pollute the land when spillage occurs. Therefore, since Perozzi discloses an antiwear agent as an amine salt of phosphorus acid and Waters discloses a specific amine salt of phosphorus acid antiwear agent that is advantageous by not contributing to pollution, it would have been obvious for Perozzi to utilize the antiwear agent disclosed by Waters.

With regard to (iii) above, Perozzi disclose the addition of a mixture of dihydrocarbyl polysulfides to aid in antiwear or extreme pressure effects. Perozzi teaches that these additives are well known in the art. Sullivan also discloses a lubricant composition comprised of a mixture of dihydrocarbyl polysulfides ([0001]). The mixture is specifically disclosed as including dihydrocarbyl disulfide, dihydrocarbyl trisulfide, and dihydrocarbyl tetra sulfide ([00200]). One such example mixture is disclosed in Table 1. Sullivan teaches that the mixture of polysulfides disclosed provides good extreme pressure properties without adverse effects ([0002]). Since Perozzi broadly discloses the use of well known polysulfides and Sullivan discloses specific well known polysulfides that are advantageous in a lubricant, it would have been obvious at the time of the invention for Perozzi to utilize the polysulfides of Sullivan.

It is the examiner's position that the polysulfide mixture disclosed by Sullivan ([0020], [0021]) would either anticipate the instantly claimed sulfur activity in a copper corrosion test or be rendered obvious. Sullivan teaches a mixture of polysulfides in specific amounts. The instant specification teaches that polysulfides achieve a sulfur activity of 126 in the copper corrosion test (see Table 3, page 17). Since Sullivan also discloses polysulfides, it is the examiner's position that the polysulfides of Sullivan would achieve this same sulfur activity absent evidence to the contrary. Additionally, Sullivan discloses several combinations of the three polysulfides that would anticipate the claims or are rendered obvious. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to **claim 4**, Sullivan teaches that the polysulfides are utilized in the lubricant composition from 0.5 to 5wt%, which clearly overlaps the instant claim, to be effective as extreme pressure agents ([0018]). Since Perozzi does not specifically disclose the amount of polysulfides in the lubricant and Sullivan teaches an effective amount, it would have been obvious at the time of the invention for Perozzi to also utilize the polysulfides from 0.5 to 5wt%.

With regard to **claims 5 and 8**, the di-hydrocarbyl thiophosphate amine salt of Waters clearly overlaps the product of the mixture of dicyclopentadiene and dialkyldithiophosphoric acid and the product of the mixture of dibutylhydrogen phosphite, sulfur, and an amine.

7. **Claims 7 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Perozzi (US 5,498,355) in view of Waters (EP 0,434,464 A1) and Sullivan (US 2003/0171222 A1) as applied to claim 1 above, and further in view of Milner (US 6,133,207).

Perozzi in view of Waters and Sullivan, as discussed above and incorporated here by reference, disclose a gear oil lubricant comprised of hydrocarbyl polysulfides, dihydrocarbyl dithiophosphate ester, and a dihydrocarbyl (mono)thiophosphate ester.

The combination of Perozzi, Waters, and Sullivan is silent as to whether the dihydrocarbyl (mono)thiophosphate amine salt is free of phosphites.

Milner teaches that the additive combination of hydrocarbyl polysulfides and dihydrocarbyl (mono)thiophosphate amine salts produces a strong odor (column 1, lines 40-55; column 2, lines 30-44; column 3, lines 16-20). The disclosed examples show that when phosphite was completely converted to the thiophosphate amine salt, no odor was generated (Inventive Example 2, column 4; Inventive Example 4, column 4 through column 5). However, when the phosphite was not completely converted, a strong odor was generated (Comparative Example 1, column 4; Comparative Example 5, column 5). This strong odor invites many concerns from residential areas near manufacturing plants that might lead to the plant closing down by orders from the EPA (column 2, line 59 through column 3, line 9). Therefore, it would have been obvious for the combination of Perozzi in view of Walters and Sullivan to produce thiophosphate amine salts free of phosphites to eliminate the strong odor.

8. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Perozzi (US 5,498,355) in view of Waters (EP 0,434,464 A1) and Sullivan (US 2003/0171222 A1) as applied to claim 1 above, and further in view of Walters (EP 0,744,456 A2).

Perozzi in view of Waters and Sullivan, as discussed above and incorporated here by reference, disclose a gear oil lubricant comprised of hydrocarbyl polysulfides, dihydrocarbyl dithiophosphate ester, and a dihydrocarbyl (mono)thiophosphate ester.

If Applicant were to argue that Waters does not disclose the product of the mixture of dibutylhydrogen phosphite, sulfur, and an amine, Walters also discloses a gear oil lubricant comprised of a base oil hydrocarbyl polysulfide, and a dihydrocarbyl (mono)thiophosphate ester. The thiophosphate amine salt is further disclosed as being the product of a dihydrocarbyl hydrogen phosphite, such as dialkyl hydrogen phosphite, sulfur, and one or more amines (page 6, lines 38-57). Since this production method is known to one of ordinary skill in the lubricant art, it would have been obvious for the dihydrocarbyl (mono)thiophosphate ester of Perozzi to also be made from a dibutylhydrogen phosphite, sulfur, and an amine.

9. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Perozzi (US 5,498,355) in view of Waters (US EP 0,434,464 A1), Sullivan (US 2003/0171222 A1), and Minn (US 4,282,153).

Perozzi in view of Waters and Sullivan, as discussed above and incorporated here by reference, disclose a gear oil lubricant comprised of hydrocarbyl polysulfides, dihydrocarbyl dithiophosphate ester, and a dihydrocarbyl (mono)thiophosphate ester.

If Applicant were to argue that Waters does not disclose the product of the mixture of dicyclopentadiene and dialkyldithiophosphoric acid, Minn discloses a method to produce a dihydrocarbyl dithiophosphate involving a reaction mixture of O,O-diethyl dithiophosphoric acid, a dialkyldithiophosphoric acid, and dicyclopentadiene (Example 3, column 3). The reaction produced bis(O,O-diethyl dithiophosphate), which is a dihydrocarbyl dithiophosphate. Since Minn discloses a successful method for producing a dihydrocarbyl dithiophosphate, it would have been obvious for Perozzi to also utilize this method, since the scope of Perozzi includes any suitable method.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMY T. LANG whose telephone number is (571)272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anh Tuan Nguyen can be reached on 571-272-4963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

04/02/2009

/Amy T Lang/

Examiner, Art Unit 3731

/Anh Tuan T. Nguyen/

Supervisory Patent Examiner, Art Unit 3731

4/3/09